

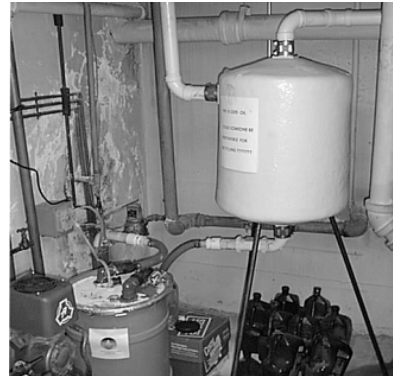
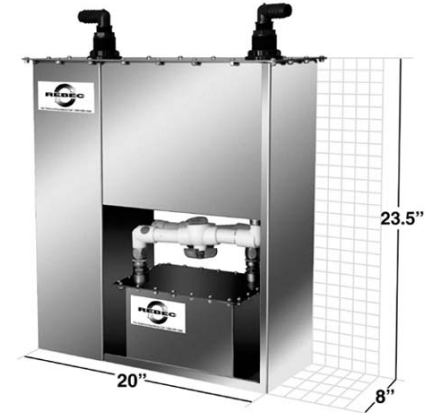
Practical Issues Associated with Installation and Operation of Dental Amalgam Separators

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Presentation Overview

- Selection Factors
- Who should install a unit?
- Space and Utility Requirements
- Regulatory Issues
- Installation Checklist/Guidelines
- Issues Encountered with Various Field Installations
- Maintenance BMPs
- Line Cleansers

Separators come in many different shapes and sizes; one size does not fit all!

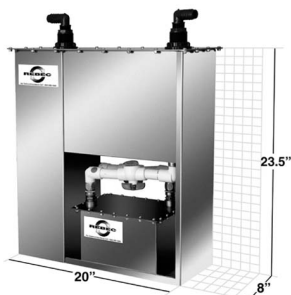


Selection Factors

- Cost
 - Volume of wastewater flow
 - Installation factors
 - # of operatories handled?
 - Chairside space?
 - Cabinet space?
 - Below grade space?
 - Before or after vacuum system?
 - Ease of installation
 - Ease of operation
 - Maintenance
 - Recycling options
 - Frequency/ease of maintenance
- What's been missing?
- Life cycle costing
 - Capital
 - O&M
 - Discounting of future costs
 - Field performance (beyond ISO 11143)



<u>Mfr.</u>	<u>Installation Location</u>	<u>Features</u>
Asdex \$215/unit \$35/canister	Between chair and vacuum pump	One unit per chair needed Monthly replacement of canisters
Solmetex Hg5 \$695/unit \$150/filter cartridge	Between chair and vacuum pump	Handles 1-5 chairs Replace filter cartridge every 6 mos (or when full)
ADA Technologies BullfroHg \$1200/yr lease	Between chair and vacuum pump (can be at outlet)	120V AC (to pump treated effluent) Capacity of 6-16 chairs (flow dependent)
R&D Amalgam \$500/unit (can be emptied and reused)	Chairside, or immediately upstream from vacuum pump	Outlet height needs to be calibrated and adjusted to flow rate Daily valve adjustments to remove treated effluent



<u>Mfr</u>	<u>Installation Location</u>	<u>Features</u>
Rasch 890 \$1190/unit \$596 per replacement unit	At end of vacuum system	1 unit serves 12 chairs Canister replacement 18 months 2000 l/day capacity
Metasys ECO \$29/month	Between chair and vacuum system	1 unit/5 chairs Annual Container exchange Internal mercury recycling program
Maximum MS 2000 \$3,000/unit	Between chair and vacuum system	1 year container capacity per dentist 1000 unit handles 1-6 operatories 2000 unit handles up to 16 operatories
Rebec \$1895/unit \$395/settle tank	Between chair and vacuum system (not designed for chairside installation)	1 unit handles 8 operatories for up to 1 year

Who Should Install A Unit?

- Licensed Plumber recommended
- Licensed Electrician may be needed for systems utilizing pumps (depending upon application)
- May be arranged by dental dealer (depending upon local code requirements, and lease requirements)

Space and Utility Requirements

- Physical Dimensions of typical units
 - Height: 9-28"
 - Width/diameter: 3-12"
 - Length 8-24"
- Installation locations (relative to existing vacuum pump and air/water separators)
 - Preferred location for gravity units: below grade if possible
 - Preferred location for units upstream of vacuum system: As close as possible to vacuum pump (to minimize vacuum impacts)
- Electrical Power Requirements: Generally require 110V for pumping wastewater (for units installed downstream of vacuum pumps)

Dental Office Constraints

- Basement vs. Office level installations
- Access to Centralized plumbing Locations
- Multi-chair installation requirements
- Tenant/Landlord Issues

Regulatory Issues

- Classification and Handling Requirements for Amalgam Wastes (varies state by state)
- State/local Plumbing Code Requirements

Installation Checklist/Guidelines

- Total # of operatories/chairs?
- How many amalgam fillings placed or removed/day?
- How many days/week of facility operations?
- Other dental practices located within your building?
 - Number and type?
- Lease or own dental office space?
 - If lease, what terms are included for utilities maintenance?
- Responsible for the following activities in your building?:
 - Equipment servicing
 - Water/sewer/utilities
 - Amalgam collection/recycling

Installation Checklist/Guidelines (cont.)

- Electrical Power: Access to 110V power at proposed location?
- Do you operate wet/dry cuspidors?
- Do you operate a wet or dry vacuum system?
- Is vacuum system dedicated to your office?
- Is this system under warranty? If yes, is the warranty voided by 3rd party installations?
- Is vacuum system located:
 - At office level
 - Basement
- Available space adjacent to vacuum system?
- Access to Chairside drain line and Sewer connection location
 - Is it a Single connection or combined connection?
 - Size/material of existing sewer connection line?











Issues Encountered with Various Field Installations

- Insufficient Space or Access to Preferred Installation Location
- Compatibility with, and condition of existing Piping
- Local Plumbing Code interpretations
- Impacts on Vacuum System Operation
- Warranty Impacts (for existing in-situ equipment)
- Who does the work?

Maintenance and Amalgam Recycling Recommendations

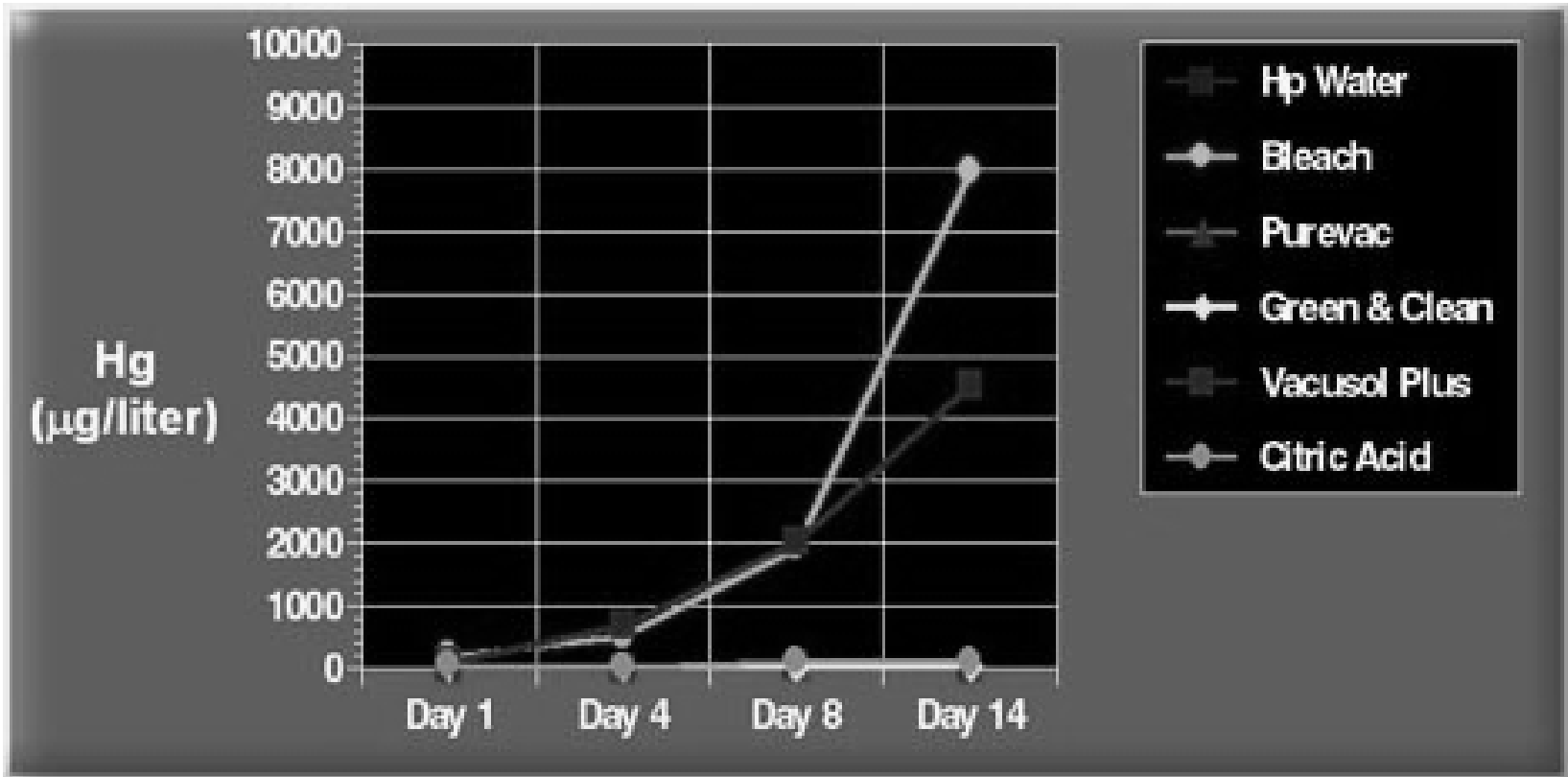
- Scheduled Frequency of Maintenance: need to monitor closely based upon individual office activities
- Recycling Options
 - Is spent amalgam a waste or a resource?
 - Wide variety of amalgam handling/disposal techniques
- System Cleaning Recommendations (e.g. cleaning product guidance)
- Building Rehab Guidelines: Assume that traps and horizontal pipe runs contain amalgam buildup
- Guidance needed for handling dental facilities on septic systems (e.g. use of sealed tanks, local waste hauling options)



Proper use/maintenance of existing traps is an important amalgam capture mechanism

Effect of Line Cleansers

Oxidizing dental vacuum line cleansers can mobilize Hg from amalgam



Source: Naval Dental Research Institute

Line Cleansers

The following did not appear to mobilize Hg
from amalgam particulate

- All-In-One
- E-Vac
- Evacuation Cleaner
- EZ-Zyme
- Gobble Plus
- Green and Clean
- MAXI-EVAC
- ProE-Vac
- Purevac
- Sani-Treet Plus
- Stay-Clean
- Super-Dent
- Turbo Vac Line Flush
- VacuCleanse
- VAC-U-EZ

Source: Naval Dental Research Institute

